

## Rabies in Wildlife...The Threat is Real!

A COLLABORATION BETWEEN THE VIRGINIA DEPARTMENT OF HEALTH, VIRGINIA DEPARTMENT OF GAME AND INLAND FISHERIES, AND THE VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

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Rabies is a preventable viral disease of mammals. The rabies virus causes encephalomyelitis and ultimately death by infecting the central nervous system.

Mammals, including humans, are exposed to rabies through bites or nonbite exposures to saliva or brain tissue from an infected animal. An exposure occurs when infectious saliva or nervous system tissue enters a bite wound, open wound or a mucus membrane. The most efficient route of transmission of the virus is through a bite.

The rabies virus cannot cause an infection through contact with intact skin. Contact with fur, blood, urine or feces from an infected animal does not constitute an exposure.

Mammals are classified as either low or high risk species for rabies. Bats and certain carnivorous mammals such as raccoons, skunks, foxes and bobcats are considered to be high risk species. In Virginia, some non-carnivorous mammals, including opossums, groundhogs and beavers, are also considered high risk because of spillover of rabies from our raccoon population.

Wild animals that are defined as being a high risk species or not well defined in regard to their public health risk should

be euthanized and tested for rabies if a person or domestic animal is exposed to their saliva or nervous system tissue.



**In Virginia the animals that we most commonly diagnose with rabies are raccoons, skunks and foxes.**

Bats are a high risk species, yet exposure to a bat can be difficult to determine. Therefore, anyone who has had direct contact with a bat and cannot rule out a bite or who has been in a room with a bat and is unable to tell whether an exposure has occurred should be considered exposed. For example, if a bat is found in a bedroom when a person awakens, seen in the room of an unattended child, or seen in a room with a mentally impaired or intoxicated person, then the person involved should be considered exposed. The bat should not be released. It should be collected and tested.

Small rodents (including, mice, rats, squirrels, chipmunks,

voles, guinea pigs, gerbils and hamsters) and lagomorphs (rabbits and hares) are considered low risk animals. Low risk animals are rarely rabid, or have never been known to transmit rabies to a human and should only be tested if acting sick or abnormal when a human or domestic animal is exposed to them.

If a person (or domestic animal) is exposed, the affected wound or mucus membrane should be washed / flushed and first aid should be applied. If it is possible, the potentially rabid animal should be captured or identified. Do not pick the animal up with your bare hands. If the animal is caught or can be located, animal control should be called. If the animal must be killed, the head should not be damaged. The components of the brain need to be identifiable for accurate testing.

When a patient calls you to notify you about a bite or nonbite exposure, you should ask them to explain how they were exposed. You should also ask if the animal has been captured. If the animal tests positive for rabies, or if a potentially rabid animal is not available for testing, then the exposed person should receive rabies post-exposure prophylaxis (PEP). [Exposed domestic animals are handled differently than exposed people.]

The local health department (HD) should be notified about any bites,

# Rabies in Wildlife... continued

as well as when PEP is given to a patient. The HD will help co-ordinate rabies testing and follow-up with the victim.

The post-exposure series consists of five doses of a rabies vaccine given over a period of 28 days. A dose of rabies immune globulin is given on the first day of the vaccine series as well.

People in high risk occupations, like veterinary medicine or animal control, may want to consider receiving the rabies pre-exposure series. This series reduces post-exposure therapy to only two doses of the rabies

vaccine and eliminates the need for immune globulin. The pre-exposure series may also provide protection against an unknown exposure.

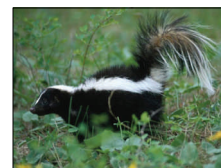
Vaccinated people who are frequently at risk of being exposed to the rabies virus should have their rabies antibody titer assessed every other year. The local health department should be able to assist a patient in receiving the vaccine series and having their titer checked.

Please contact your local health department with any questions about rabies.

Virginia's state guidelines for rabies prevention and control can be viewed at:

<http://www.vdh.virginia.gov/epidemiology/DEE/Rabies/vgrpc.htm>

*Note: When dogs, cats or ferrets bite a person, they are managed differently than wildlife because there are established observation periods for these animals.*



**71% of the skunks that were tested\* by the state lab in 2007 were positive for rabies.**

**\*Animals are only tested if they have potentially exposed a human or domestic animal.**

## Leptospirosis - coming to a body of water near you

### What is leptospirosis?

Leptospirosis is a disease caused by spiral shaped bacteria called leptospires. This disease occurs worldwide and can affect humans as well as many wild and domestic animals.

There are over 200 antigenically distinct pathogenic leptospiral serovars. Cross-immunity between serovars is moderate, and people or animals, can be infected with more than one serovar at a time.

### How do people and animals get leptospirosis?

While some other body fluids can contain leptospires, contact with contaminated urine is the most common way people and animals are exposed to these bacteria. Infected animals shed these bacteria in their urine which can contaminate water or soil and survive there for weeks to months. Many different kinds of animals, both domestic and wild, can become infected with leptospires. Some of these animals can become infected and shed the bacteria without ever becoming clinically ill. Infected animals may excrete these bacteria into the environment continuously or

occasionally for anywhere from a few months to several years.

Humans and animals can become infected by direct contact with contaminated urine or through contact with contaminated water, food or soil. The bacteria can enter the body through the skin or mucous membranes, especially if the skin is compromised.

Domestic animals may become infected by drinking, swimming, or walking through contaminated water. Dogs may pass the disease to each other, but this happens very rarely.

Outbreaks of leptospirosis in people are usually caused by exposure to water contaminated with urine from infected animals. Human infections have also been reported in people who have had direct contact with infected dogs. Direct person to person transmission is rare.

## Leptospirosis continued

### What are the signs of leptospirosis in humans?

In people, the symptoms are often flu-like, but sometimes leptospirosis can develop into a more severe, life-threatening illness that can affect numerous organs including the kidney, liver, brain, lung, and heart.

The time between exposure to the bacteria and development of disease is usually 10 days, but can be as short as a few days or as long as 30 days or more.

### What are the signs of leptospirosis in animals?

The clinical signs of leptospirosis vary, and can be nonspecific. Sometimes animals do not have any signs of disease! The common clinical signs reported in dogs include fever, vomiting, abdominal pain, diarrhea, anorexia, lethargy, depression, stiffness, myalgia, or an inability to have puppies. Generally younger animals are more seriously affected than older animals. Calves may have a fever, anorexia and dyspnea. Certain serovars can cause icterus, hemoglobinuria and anemia in cattle. Older cows may abort and produce abnormal milk.

### How do you diagnose leptospirosis?

Leptospirosis can be detected with multiple testing modalities. Blood and cerebrospinal fluid samples may be cultured during the early septicemic phase of the illness, and urine may be cultured after seven to ten days of illness. Leptospire are not easily cultured, so the microscopic agglutination test (MAT) is the most commonly used test for diagnosis of leptospirosis. It measures both IgM and IgG antibodies in the blood. IgM antibodies appear within six to 12 days after infection, and IgG antibodies appear after two to three weeks. A single seropositive test is of limited diagnostic significance, especially in animals that have been previously vaccinated. The diagnosis can be confirmed with a rising titer in paired serum samples that are taken one to two weeks apart.

The MAT is generally performed by reference laboratories due to the inherent safety risks of handling cultures of live leptospiral organisms, the high cost of commercial media, and the need for ongoing maintenance of representative serovars or serogroups. Contact your reference lab for more information (Smythe, 2002).

Some carriers, or shedding animals, will not have diagnostic titers.

Darkfield microscopy can be used but it is not specific.

### Is there a treatment for leptospirosis?

Yes. Leptospirosis infections in humans and animals are treatable with antibiotics. Early treatment may enable humans and animals to recover more rapidly and minimize organ damage. In more severe cases, dialysis and hydration therapy may be required.

Doxycycline is standard therapy for the treatment of early or mild leptospirosis in humans. The drug of choice for severe cases of leptospirosis is intravenous penicillin. It is effective as late as seven days into the illness. Doxycycline, ampicillin, or erythromycin can be used in patients allergic to penicillin (APHA, 2004).

Dogs are usually treated with penicillin, tetracycline or doxycycline. Tetracycline and doxycycline are used to eliminate the renal carrier phase (Merck, 2006).

### Is there a prophylactic treatment protocol?

The Centers for Disease Control and Prevention (CDC) does not provide standard recommendations for post-exposure prophylaxis following exposure to dogs with leptospirosis, as the risk of getting leptospirosis from a dog in standard instances is suspected to be low.

The World Health Organization (WHO) recommends prophylactic antimicrobial therapy with doxycycline in the instance of a known or anticipated occupational or recreational, exposure. For example, pre-exposure prophylaxis is recommended for triathletes competing in, and military troops traveling to, endemic areas.

### How do I handle a dog that is positive?

Dogs diagnosed with leptospirosis should be isolated from other animals while hospitalized, and after returning home with their owners. They should be taken to urinate in areas where no dogs, other



## Leptospirosis continued

pools and natural bodies of water. Appropriate antimicrobial therapy can decrease the duration of clinical symptoms in dogs, but shedding of leptospires in the urine may persist for up to three months after infection.

Please refer to the “Compendium of Veterinary Standard Precautions: Zoonotic Disease Prevention in Veterinary Personnel” for more information on bio-security in veterinary clinics. <http://www.nasphv.org/documentsCompendia.html>

### How can I protect myself?

- Do not handle or come in contact with urine, blood, or tissues from an infected human / animal.
- If you need to have contact with human / animal tissues or urine, wear protective clothing, such as gloves and boots, especially if you are occupationally at risk (veterinarians, medical care providers, farm workers, and sewer workers). All blood, urine, and tissues from infected humans / animals should be considered biological hazardous waste.
- Always wash your hands after handling a person / animal or anything that might have a person's / animal's excrement on it.
- If you are cleaning surfaces that may be contaminated or have urine from an infected human / animal on them, use an antibacterial cleaning solution or a solution of 1 part household bleach in 10 parts water, and wear protective equipment.
- Do not swim or wade in water that might be contaminated with animal urine.
- Keep rodent problems under control. Rodents can carry and spread the bacteria.
- Vaccinate domestic animals against leptospirosis.

**If you have had a high-risk contact, inform your physician. If common symptoms, such as fever, muscle aches, and headaches, occur within 3 weeks after a high-risk exposure, see your physician.**

### Leptospirosis References:

American Public Health Association  
Control of Communicable Diseases Manual, Eighteenth edition  
<http://www.apha.org/>

Centers for Disease Control and Prevention (CDC)  
[http://www.cdc.gov/ncidod/dbmd/diseaseinfo/leptospirosis\\_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/leptospirosis_g.htm)

Merck & Co, Inc  
The Merck Veterinary Manual, Ninth Edition  
<http://www.merckvetmanual.com/mvm/index.jsp>

National Association of State Public Health Veterinarians (NASPHV)  
Compendium of Veterinary Standard Precautions: Zoonotic Disease Prevention in Veterinary Personnel, 2006  
<http://www.nasphv.org/documentsCompendia.html>

Smyth, L.D. et al. A quantitative PCR (TaqMan) assay for pathogenic *Leptospira* spp. BMC Infectious Diseases 2002, 2:13

World Health Organization  
<http://www.who.int/zoonoses/diseases/leptospirosis/en/>

## Methicillin-resistant *Staphylococcus aureus* (MRSA) Information for Veterinarians

Methicillin-resistant *Staphylococcus aureus* (MRSA) is commonly found in the nasal passages and on the skin of humans and animals, including horses, dogs, cats, and pigs. Several of the MRSA infections that we have seen in animals appear to have resulted from human-to-animal transfer. Direct skin-to-skin contact is the most common way MRSA is transmitted, but it can also be transmitted by contaminated objects and surfaces, like stethoscopes.

Symptoms of a MRSA infection depend on where the infection is located. Infections of the skin are the most common and cause symptoms such as redness, warmth, purulent discharge and a wound that does not heal. You may refer to these infections as boils, furuncles, impetigo, or abscesses. Infections can also develop in the blood, bone, bladder, lungs, and other sites. Symptoms may include fever and pain at the site of the infection. Treatment of MRSA infections varies from case to case. Localized skin infections may be treated with topical cleaning agents and antibiotic ointments, while more serious infections may be treated with oral, or intravenous, antibiotics. The antibiotic chosen should be based upon the results of culture based antimicrobial sensitivity tests. If a pet is colonized but not infected, no treatment may be needed.

### **To limit the spread of MRSA within your clinic, you should:**

1. Correctly perform hand hygiene and disinfection of surfaces and equipment between patient visits. It is important that methods used for hand and environmental decontamination are appropriate for MRSA. Antibacterial gels or hand rubs attached to uniforms and kennel doors are a good visual cue for cleanliness and can be quickly used before and after handling an animal, and before touching pens, keyboards, etc. When hands are soiled, soap and water **must** be used. It is important to avoid using materials and equipment that cannot be cleaned at hand touch sites. Consider using waterproof key boards, flat keyboards or keyboard covers in those cases.
2. Wear simple uniforms/coats that can be laundered on site.
3. Wear gloves and disposable aprons for direct contact with patients, body fluids, lesions and other contaminated materials. Face and eye protection should be worn if aerosols are likely to be generated.
4. Cover existing wounds or skin lesions with waterproof dressings.
5. Isolate patients with, or suspected of having, a communicable infection.
6. Use antibiotics in a rational manner in order to minimize the development of antibiotic resistance.
7. Practice high standards of aseptic techniques for all invasive procedures.
8. Institute strict standards of cage cleaning.
9. Dispose of waste and sharps properly.
10. Apply approved procedures for sterilization and disinfection of instruments and equipment.
11. Ensure that your staff is aware of, understands, and adheres to infection control guidance. Designate specific staff members to monitor and enforce infectious disease control measures and undertake infection control audits. A Model Infection Control Plan for Veterinary Practices is available at: <http://www.nasphv.org/Documents/ModelInfectionControlPlan.doc>

**Animals that visit human healthcare facilities** should be healthy and under the care of a veterinarian. These animals should not:

- visit high-risk patients such as patients with implants, epidermal or mucosal barrier defects, MRSA infections, immunosuppressive conditions, etc.
- lick the face of the patient
- climb on beds or other furniture. Where this is necessary (e.g. with cats and other small animals or bed ridden patients) an impermeable pad (e.g. incontinence pad) should be placed under the animal.
- be present when patients are eating, during cleaning and changes of bandages, and when any medical or surgical procedures are being undertaken.

Routine screening of animals for MRSA is expensive, time-consuming and the results may be confusing. However, if general MRSA surveillance of hospital personnel and / or patients is performed, visiting or resident animals should be included.



## Methicillin-resistant *Staphylococcus aureus* (MRSA)

### Information for Veterinarians ...continued

#### **What do I tell the client when their pet has MRSA?**

1. Follow the wound care instructions that I have given to you.
2. Practice good hand hygiene. You, your family, and others in close contact with pets should wash their hands frequently with soap and warm water or use an alcohol based hand sanitizer, especially after changing the infected animal's bandage or touching an infected wound.
3. If possible, wear disposable gloves when touching items such as the animal's bedding, bandages, or any other objects that may have been in contact with the infected wound.
4. Clean washable items that become soiled with hot water and laundry detergent . Use bleach if possible. Dry the laundry in a hot dryer.
5. Use a household disinfectant or bleach solution to clean any surfaces contaminated by wounds or drainage.
  - To make bleach solution mix 2 teaspoons bleach into one quart of water.
  - Be sure to make a new bleach solution every day.
6. If anyone in you home has recently had surgery or is immunocompromised, he/she should avoid contact with the infected pet, the pet's wound, and any contaminated items such as bandage materials.
7. Seek advice from you doctor if you think you might be experiencing symptoms of a MRSA infection and anytime you feel sick.

**MRSA in animals is not reportable to the Health Department; however, we are available to answer your questions, address your concerns and assist you in educating your clients about MRSA and their pets.**

#### **MRSA References:**

Center for Disease Control and Prevention, [www.cdc.gov](http://www.cdc.gov)

National Association of State Public Health Veterinarians, Veterinary Standard Precautions Compendium, [www.nasphv.org/documents/Compendia.html](http://www.nasphv.org/documents/Compendia.html)

Department for Environment Food and Rural Affairs, [www.defra.gov.uk](http://www.defra.gov.uk)



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